TNRCC REGULATORY GUIDANCE

Municipal Solid Waste
RG-235
June 1996

SUBJECT: Used Antifreeze (Used Coolant)
Proper Management Practices

Introduction

The Texas Natural Resource Conservation Commission (TNRCC) receives many inquiries from generators, transporters, collection centers, treatment and storage facilities, recyclers and the general public regarding the regulatory status of used antifreeze. Some entities may be uncertain whether used antifreeze is designated as a hazardous waste and how it can best be handled. This guidance document provides brief recommendations on waste management practices to promote recycling of used antifreeze. This should result in less used antifreeze being disposed of improperly or discharged to sanitary sewers and therefore, further protect the environment.

What Is Used Antifreeze?

Antifreeze is a solution of ethylene glycol (sometimes propylene glycol), water and additives. Antifreeze is used to protect liquid-cooled internal-combustion engines to prevent freezing during the winter and boil-over during the summer and consequently damage to the engine water jacket and radiator. During use, an antifreeze solution eventually becomes contaminated and is unfit for future use without processing.

Ethylene Glycol & Propylene Glycol

Low freezing point and high boiling point of ethylene glycol and propylene glycol make these chemicals ideal to use as a radiator coolant when mixed with water. About 40 percent of the ethylene glycol produced domestically is used as antifreeze for liquid-cooled motor vehicles. Ethylene glycol is also used as an aircraft de-icer in colder climates. Ethylene glycol and propylene glycol are both biodegradable. However, propylene glycol-based antifreeze degrades at a slower rate than ethylene glycol. Propylene glycol is less toxic than ethylene glycol. It is very important to understand that while propylene glycol-based antifreeze may be less toxic than ethylene glycol, the additives, other constituents, and heavy metals contained in both types of antifreeze (resulting from use) may be hazardous. However, both types of antifreeze can be recycled. It is important to note that the two types of antifreeze cannot be commingled for recycling purposes.

Is Used Antifreeze a Hazardous Waste?

Used antifreeze may become contaminated with heavy metals (especially lead), or organic compounds like benzene when removed from a vehicle. The Environmental Protection Agency (EPA) has established that used antifreeze often contains lead levels sufficiently high to classify the waste as characteristically hazardous for toxicity. The

potential for lead contamination in used antifreeze may be eliminated as the industry increases the use of radiators with aluminum cores and plastic tanks, instead of the old style with solder on copper/brass radiators. Antifreeze could also become contaminated through poor waste management activities. For example, since waste antifreeze is often generated at automotive repair shops where solvents containing perchloroethylene are generated (i.e., shops using brake cleaner and/or carburetor cleaner to service the car when the antifreeze is changed), the cleaners may be contaminating the antifreeze. Therefore, the segregation and waste removal practices of these businesses may be critical in preventing the contamination of antifreeze with perchloroethylene and/or benzene (from dirty oil pans).

Used antifreeze is a solid waste. As with any solid waste, the generator of used antifreeze is responsible for determining, either by process knowledge or by analytical testing, whether the waste is hazardous. If the waste is hazardous, it must be managed according to the hazardous waste regulations.

Federal Rules

The EPA has not issued specific regulations for used antifreeze, but general rules for hazardous waste can apply.

A generator of less than 100 kg. per calendar month of hazardous waste is considered a conditionally exempt small quantity generator (CESQG). After a hazardous waste determination has been made, a CESQG is exempt from manifesting and most hazardous waste regulations (if they meet the requirements listed in 40 CFR Part 261.5(g)).

Antifreezes generated at households are excluded from regulation as a hazardous waste. Antifreeze from households can be taken to a local household collection center. For more information, please call the TNRCC Used Oil and Used Oil Filter Recycling Program at (512) 239-6001.

State Rules

Currently, Texas has no specific regulations on the management of used antifreeze. Texas follows the EPA's regulations for disposal of used antifreeze (i.e., if it is intended for disposal, it is regulated as a solid waste and is subject to hazardous waste determination).

When recycling antifreeze, the generator must comply with proper handling of the waste such as proper labeling sturdy, leakproof containers, or tanks.

Disposal to a POTW

The TNRCC does not have any jurisdiction to prohibit sending used antifreeze to a publicly owned treatment works (POTW). However, TNRCC staff advises that used antifreeze not be discharged to a sanitary sewer system without local approval. Local authorities take responsibility for the waste accepted into their system to protect their effluent waters and maintain compliance with their permit. Many local water treatment owners/operators are trying to discourage the discharge of used antifreeze to a POTW because the recycling of used antifreeze is becoming more wide spread.

Recycling Used Antifreeze

There are several technologies for recycling used antifreeze. Antifreeze recycling includes such processes as distillation or re-refining with recovery of ethylene glycol or propylene glycol for reuse as coolant or raw material, or regeneration by filtering. There are also other technologies such as ion exchange, reverse osmosis, chemical treatment, or a combination of these methods. All the above methods remove contamination to some extent. It is important to note that in each method of recycling, the percent removal of total contaminants varies (not just particulate matter). For example, filtration does not remove dissolved particles or compounds, unless the particles

are chemically precipitated prior to filtration. In addition to removing metals, salts, and organic contaminants, the recycled antifreeze should be certified by the American Society of Testing and Materials (ASTM). This means that the recycling unit must demonstrate that the boiling point, freezing point, pH, and corrosion resistance functions of the antifreeze are restored to ASTM specifications for virgin coolant when recycled (ASTM is working on a set of specifications for recycled coolant). Filters, residues, or by-products generated as a result of recycling or treatment of used antifreeze are solid waste and are subject to the hazardous waste determination. Recycling antifreeze is the most economical and environmentally safe option. Please call the TNRCC Used Oil and Used Oil Filter Recycling Program at (512) 239-6001 for the antifreeze recycler in your area.

Summary: (Dos & Don'ts)

Dos:

☞Do recycle used antifreeze.

☞Do label all containers.

☞Do call the TNRCC at (512) 239-6001 for the antifreeze recycler in your area.

☞Do determine whether used antifreeze is hazardous.

☞Do obtain approval prior to discharge to a POTW.

Don'ts:

☞Don't discharge used antifreeze to surface water or ground water.

☞Don't discharge used antifreeze to a septic system.

☞Don't mix used antifreeze with other wastes (i.e., waste solvent, used oil, etc.).

For more information please contact:
Municipal Solid Waste Division, Automotive Waste Management Section, Used Oil and Used Oil Filter Recycling Program at (512) 239-6001.

Prepared by the TNRCC Used Oil and Used Oil Filter Recycling Program